

Remarks

Reconsideration and withdrawal of the restriction requirement are respectfully requested. More generally, reconsideration and allowance of this application, as amended, are respectfully requested.

Claims 1-11 have been editorially amended to more fully comply with U.S. practice. Claims 1-11 remain pending in the application. Claims 1 and 7 are independent. No new matter has been introduced through the foregoing amendments.

In addition to the format amendments mentioned above, claim 1 has been amended to even more clearly define the nature of the inventive method. That is, instant claim 1 defines in pertinent part "[a] *method of producing* aluminum fuel particles having improved ignitability and burn rate." Independent claim 7, which is directed to the product, i.e., the aluminum fuel particles, has been amended to even more clearly define the nature of the product's composition. Entry of each of the amendments is respectfully requested.

Turning to the Office Action, Applicant respectfully requests, as provided for in 37 CFR § 1.143, reconsideration and withdrawal of the restriction requirement. Applicant traverses the restriction requirement for at least the following reasons.

First, as provided for in 37 CFR § 1.475(b), an international or a national stage application containing claims to different categories of invention will be considered to have unity

of invention if the claims are drawn only to one of various combinations of categories. The first of the categories, defined by 37 CFR § 1.475(b)(1), is "[a] product and a process specially adapted for the manufacture of said product."

The provisions of 37 CFR § 1.475 (b)(1) describe exactly the claims of the instant application. The method claims 1-6 define a specially adapted method for the manufacture of the product of claims 7-11.

Furthermore, 37 CFR § 1.475(a) ("Unity of invention before the International Searching Authority, the International Preliminary Examining Authority and during the national stage") provides for unity of invention as follows:

An international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a *technical relationship* among those inventions involving one or more of the same or corresponding special technical features. The expression "*special technical features*" shall mean *those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.* (Emphasis added)

In the Office Action the examiner asserts that "[t]he inventions listed as Groups I and II do not relate to a single general inventive concept" because "[t]here is no special technical feature which defines over the prior art of record, see US 4017342"

(i.e., U.S. Patent No. 4,017,342 to Geisler et al., hereinafter "Geisler") (Office Action page 2, numbered paragraph 2).

Applicant respectfully disagrees. In the instant case, there is unity of invention because the method of making a fuel claims 1-6 and the fuel claims 7-11 define inventions that do share the required special technical feature: a surface layer of an alkali metal and/or an alkaline earth metal fluoride complex from an aqueous solution. The unity of invention is evident from inspection of Applicant's claims. See Applicant's instant method claim 1, which reads in pertinent part as follows:

treating the aluminum fuel particles with an aqueous solution of hydrofluoric acid and at least one of (i) a fluoride and (ii) a complex fluoride of at least one of an alkali metal and an alkaline earth metal to form a surface layer of a fluoride complex bound to the aluminum fuel particles.

Then, see Applicant's instant claim 7:

fuel particles comprising a surface layer of a fluoride complex provided by treatment of aluminum particles with an aqueous solution of hydrofluoric acid and at least one of (i) a fluoride and (ii) a complex fluoride of at least one of an alkali metal and an alkaline earth metal.

Therefore, the claimed technical feature of the instant application that defines over the prior art of record, i.e., Geisler, is to provide a surface layer of an alkali metal and/or an alkaline earth metal fluoride complex from an aqueous solution. The aluminum oxide coating is dissolved by the acidic solution and

the fluoride complex is formed on the "clean" metal surface of the powder.

More specifically, the aforementioned technical feature defines over the prior art because Geisler ("Method for Improving Metal Combustion in Solid Rocket Propellants") teaches exposing aluminum oxide coated aluminum metal powder to hydrofluoric gas to effect a reaction (see, e.g., the abstract). The aluminum oxide coating on the metal powder is replaced by an aluminum fluoride coating, formed after diffusion of the gaseous molecules through the oxide layer into the aluminum metal. Drawbacks associated with Geisler's method are summarized at instant specification page 2, lines 3-5. Furthermore, Geisler does not teach forming a metal fluoride of any other metal than aluminum since the fluoride is provided by gaseous hydrofluoric acid.

As further evidence of the unity of invention, a European patent (EP 1 569 879 B1) was granted on July 2, 2008, for the eleven claims originally presented in the instant U.S. application.

Accordingly, there is unity of invention because the method of making a fuel claims 1-6 and the fuel claims 7-11 define inventions that share the required special technical feature. Accordingly, the inventions defined by claims 1-11 meet the requirement of 37 CFR § 1.475(b)(1), i.e., "[a] product and a process specially adapted for the manufacture of said product."


As required by 37 CFR § 1.143, Applicant also hereby provisionally elects, with traverse, Group II, claims 7-11, drawn to the fuel. In response to the election of species requirement, Applicant provisionally elects the fluoride complex tripotassium hexafluoroaluminate. Claim 11 is readable on the elected species.

In summary, however, Applicant respectfully requests reconsideration of the restriction requirement, and submits that withdrawal of the requirement is proper. Accordingly, examination of all of pending claims 1-11 is requested.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

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Date: November 10, 2008